



STUDY

I-395/Route 9 Transportation Study

Penobscot County, Maine

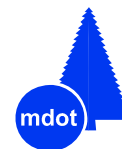
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Noise Analysis Technical Memorandum

May 2004



U.S. Department
of Transportation
Federal Highway
Administration



Maine Department
of Transportation

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Note: Appendices are not available for the Web version of this document.

I. INTRODUCTION

This noise technical memorandum provides background information and data supporting the corresponding sections in the environmental assessment prepared for the I-395/Route 9 Transportation Study.

II. METHODOLOGY

Fourteen noise sensitive areas (NSAs) were identified in the study area (see figure 1, page 3). Noise measurements were taken in the study area in October of 2001. Twenty-five 20-minute measurements were taken at representative receptors likely to be affected by traffic noise generated by the construction and operation of the preliminary range of reasonable alternatives.

For sites immediately adjacent to roadways, concurrent counts of automobiles, medium trucks, and heavy trucks were recorded, and speed observations were made for model calibration purposes. Measurements were taken with a Rion NA-27 Type I sound level meter in accordance with techniques described in the Federal Highway Administration (FHWA) Report Number FHWA-PD-96-046, *Measurement of Highway Related Noise*. Table 1 (pages 5-6) summarizes data from the measurement program.

Measured noise levels, concurrent traffic data, and other pertinent observations made during each measurement period were recorded on highway noise monitoring sheets (Appendix A). Noise levels are A-weighted hourly equivalent noise levels in decibels — $L_{eq}(h)$ dBA. The hourly L_{eq} , or equivalent sound level, is the level of constant sound, which in an hour would contain the same acoustic energy as the time-varying sound (the fluctuating sound levels of traffic noise are represented in terms of a steady-state noise level of the same energy constant). A-weighting simulates the response of the human ear to noise. Measurements were conducted during a.m. peak, p.m. peak, and off-peak periods.

In April 2004, the U.S. Army Corps of Engineers agreed with the MaineDOT and the FHWA that Alternative 3EIK-2 should be identified as the preferred alternative for satisfying the purpose and needs of the study. The MaineDOT and FHWA will be finalizing their environmental assessment (EA) that considers in detail the No-build Alternative and Alternative 3EIK-2. The potential noise impacts of these alternatives, both beneficial and adverse, are documented in this technical memorandum.

III. MEASURED NOISE LEVELS

NSA-1 represents an area of mostly commercial land use with some mixed residential development along Route 1A between I-395 and Copeland Hill Road. The terrain along Route 1A in this area was generally level. Measurement site (MS) 1-1, the single measurement site in NSA-1, was located in a gravel parking area at the

Wee Home Campground. The dominant source of noise during the measurement was traffic on Route 1A. The measured p.m. peak hour noise level at MS 1-1 was 66 dBA.

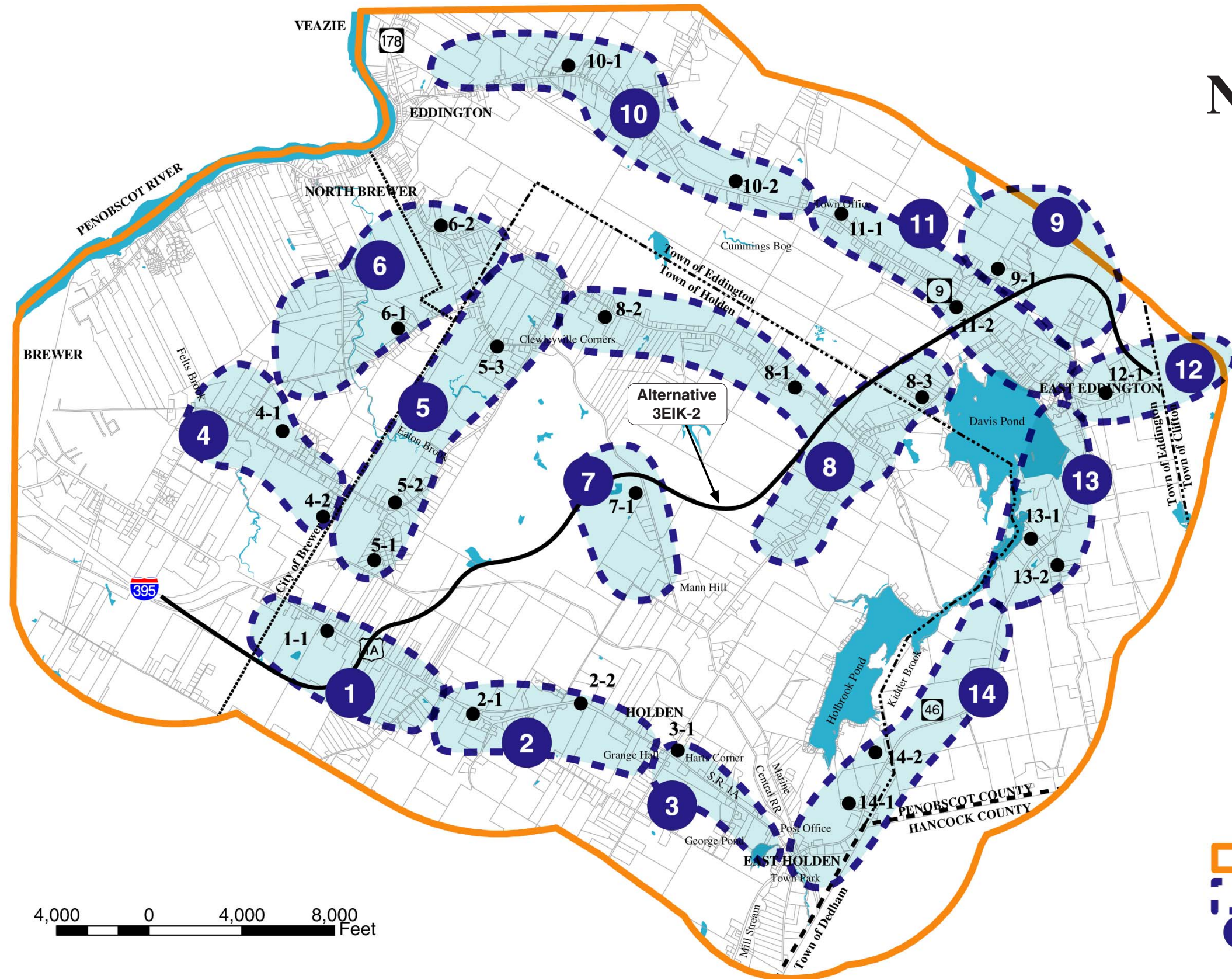
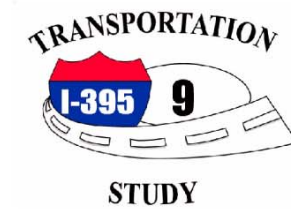
NSA-2 represents an area of mixed residential and commercial development along Route 1A between Copeland Hill Road and South Road. This area consists of relatively flat to gently rolling terrain. Two noise measurements were conducted in NSA-2. The primary source of noise at both measurement sites was traffic on Route 1A. MS 2-1 was located in the gravel parking area at the Maine Kitchen Equipment and Supply Company. The measured a.m. peak hour noise level at MS 2-1 was 71 dBA. MS 2-2 was located on the lawn in front of the Holden School. The measured noise level at this location was 65 dBA.

NSA-3 represents the mixed residential and commercial development along Route 1A between South Road and the Route 46 intersection. The terrain ranged from level to rolling hills. Traffic on Route 1A was the major noise source at MS 3-1, the only measurement site in NSA-3. The site was located in the front yard of a residence. The measured p.m. peak hour noise level was 71 dBA.

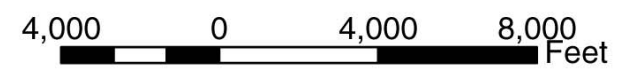
NSA-4 represents several sub-developments along Eastern Avenue east of the Brewer city limits. There were two measurements conducted in NSA-4. The noise levels measured were representative of background noise at the western end of the study area. The only highway noise audible during the measurements was distant traffic from Route 1A. Eastern Avenue was not visible from either site. MS 4-1 was located along Woodridge Road to the north of Eastern Avenue. The surrounding terrain was level and mostly wooded. The measured a.m. peak hour noise level was 41 dBA. At MS 4-2, a cul-de-sac on Brian Drive to the south of Eastern Avenue, the surrounding terrain was level and partially wooded. The measured noise level at MS 4-2 was 46 dBA.

NSA-5 represents the residential area along Eastern Avenue between Mann Hill Road and Eaton Ridge Drive, including the community on Eaton Ridge Drive. Much of the surrounding land was wooded and the terrain ranged from level to gently sloping. Three measurements were conducted in NSA-5. MS 5-1 was located at a residence on Eaton Ridge Drive. Noise from distant traffic on Route 1A was audible as background, and only one automobile passed by on Eaton Ridge Road during the measurement. The measured a.m. peak hour noise level, 45 dBA, was representative of background noise in the area. MS 5-2 was located in the front yard of a residence along Eastern Avenue. Automobile traffic on Eastern Avenue was the primary source of noise during the measurement. The p.m. peak hour noise level measured at MS 5-2 was 55 dBA. MS 5-3 was located at the intersection of Eastern Avenue and Mann Hill Road. Automobile traffic on Mann Hill Road and Eastern Avenue was the main source of noise. One heavy truck passed by on Eastern Avenue during the measurement. The measured a.m. peak hour noise level at MS5-3 was 55 dBA.

Figure 1 Noise Sensitive Areas



- Study Area Boundary
- Noise Sensitive Area Boundary
- Noise Sensitive Area
- Noise Sampling Sites



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Table 1, Noise Measurement Data

Measurement Site	Setback from edge of near roadway (ft)	Date	Time	Measured noise level Leq(h) (dBA)	Total Hourly Traffic During Measurement Period
1-1 Gravel parking area at Wee Holmes Campground, Route 1A	70	10/1/2001	2:52 PM	65.8	1,341
2-1 Gravel parking area at Maine Kitchen Equipment & Supply Co. at 421 Route 1A	72	10/4/2001	8:13 AM	71.0	1,170
2-2 Holden School, Route 1A	110	10/2/2001	6:01 AM	64.7	576
3-1 Front yard of residence at 708 Route 1A	50	10/2/2001	4:35 PM	71.3	1,614
4-1 Shoulder of road in front of residence at 83 Woodridge Road	5	10/2/2001	8:35 AM	41.2	background
4-2 On cul-de-sac in front of residence at 76 Brian Drive	95	10/2/2001	8:07 AM	45.7	background
5-1 Front yard of residence at 150 Eaton Ridge	80	10/3/2001	7:42 AM	44.5	background
5-2 Front yard of residence at 915 Eastern Avenue	60	10/1/2001	3:34 PM	54.8	84
5-3 Front yard of residence at the corner of Eastern Avenue & Mann Hill Road	66	10/3/2001	7:00 AM	54.9	background
6-1 Grassy area next to driveway at 29 Lambert Road	110	10/3/2001	6:10 AM	47.8	18
6-2 Grassy area next to driveway of residence at 52 Levenseller Road	60	10/2/2001	7:11am	50.4	33
7-1 Front yard of residence at 638 Mann Hill Road	100	10/3/2001	8:17 AM	50.7	54
8-1 Driveway of residence at 431 Levenseller Road	80	10/2/2001	6:39 AM	50.5	42

Table 1, Noise Measurement Data (continued)

Measurement Site	Setback from edge of near roadway (ft)	Date	Time	Measured noise level Leq(h) (dBA)	Total Hourly Traffic During Measurement Period
8-2 Front yard of residence at 753 Levenseller Road	90	10/1/2001	4:19 PM	43.4	36
8-3 Front yard of residence at 183 Rooks Road	80	10/1/2001	4:52 PM	53.1	75
8-3 Front yard of residence at 183 Rooks Road	80	10/1/2001	4:52 PM	53.1	75
9-1 Undeveloped homesite along Stony Ridge Road	52	10/2/2001	2:49 PM	41.1	background
10-1 Edge of driveway in front of residence at 752 Route 9	98	10/3/2001	3:53 PM	63.9	381
10-2 Yard next to residence at 990 Route 9	64	10/3/2001	3:11 PM	63.5	330
11-1 Grassy area next to abandoned commercial property at 1024 Route 9	87	10/4/2001	7:23 AM	64.7	363
11-2 Backyard of residence at Hope Manor, Route 9	68	10/1/2001	5:24 PM	62.4	384
12-1 Edge of parking lot of residence at 1499 Route 9	100	10/2/2001	3:23 PM	63.5	459
13-1 Cleared gravel area along Route 46 to the south of Hatcase Pond Road	65	10/2/2001	4:00 PM	61.4	222
13-2 Along Hatcase Pond Road	50	10/3/2001	9:05 AM	38.8	6
14-1 Next to parking lot in front of Holbrook School along Route 46	80	10/4/2001	6:23 AM	58.0	123
14-2 Front yard of residence at 4 Edge of Town Road Along Route 46	95	10/3/2001	4:43 PM	58.7	81

NSA-6 represents residences located along Lambert Road and Levenseller Road in North Brewer. The terrain in this area varied from level to rolling hills and the land was partly wooded. Two measurements were conducted in NSA-6. MS 6-1 was located in the front yard of a residence along Lambert Road. Six automobiles passed by on Lambert Road during the measurement, and the background noise measured was from distant traffic in North Brewer and on Route 9 in Eddington. The a.m. peak hour noise level measured at MS 6-1 was 48 dBA. MS 6-2 was located at 52 Levenseller Road. Nine automobiles and two school buses passed by during the measurement. Distant background noise from traffic on Route 1A was clearly noticeable. The measured a.m. peak hour noise level was 50 dBA.

NSA-7 represents several residences located along Mann Hill Road near the proposed alignment for Alternative 3EIK-2. The terrain consisted of rolling hills with areas of open space and woodlands. Traffic on Mann Hill Road, intermittent during the measurement, was the main source of noise in NSA-7. Noise from distant traffic was barely audible during periods when no traffic was present on Mann Hill Road. The measurement site was located in the front yard of a residence along Mann Hill Road. The measured a.m. peak hour noise level in NSA-6 was 51 dBA.

NSA-8 represents residences located along Levenseller Road in the vicinity of Alternative 3EIK-2, and along Rooks Road to the east of the proposed alignment. The terrain was mostly level and the land use varied from mixed woodland to meadows. Three measurements were taken in NSA-8. MS8-1 and MS 8-2 were located along Levenseller Road to the west and east of Alternative 3EIK-2, respectively. Traffic on Levenseller Road was the primary noise source at these two sites. At MS 8-1 the measurement site was located in the parking area between a house and a garage, and south of a stand of pine trees. Distant noise from traffic on Route 9 was audible in the background. The a.m. peak hour noise level measured at MS 8-1 was 51 dBA. At MS 8-2 the measurement location was in the front yard of a residence along Levensellar Road. Because of birds, crickets and neighborhood activities (distant lawn mowers, weed whackers, chain saws) noise from distant traffic was not audible at this site. The p.m. peak hour traffic noise measured at MS 8-2 was 43 dBA. At MS 8-3 the measurement site was located in the front yard of a residence along Rooks Road. Traffic on Rooks Road was the main source of noise during the measurement period. Background noise consisted of birds, and activities from neighbors working in yards and a garage. The p.m. peak hour noise level was 53 dBA.

NSA-9 represents a secluded area of widely spread homes located along Stony Ridge Road to the northwest of the existing intersection of Route 9 and Route 46. Alternative 3EIK-2 would traverse through this hilly, wooded area. One automobile passed by during the measurement period. Background consisted of birds, crickets, rustling leaves and occasionally, traffic on Route 9. The measured p.m. off-peak noise level was 41 dBA, and was representative of background noise in the study area.

NSA-10 represents the mixed residential and commercial area along Route 9 between Route 178 and Chemo Road. Two measurements were conducted in this NSA. The primary noise source was traffic on Route 9. The terrain was hilly toward

the western end of this NSA but overall was relatively level. MS 10-1 was located next to the parking area at a residence along Route 9. The p.m. peak hour noise level measured was 64 dBA. MS 10-2 was located in the side yard of a residence along Route 9. The measured p.m. peak hour noise level was 64 dBA.

NSA-11 represents the mixed residential and commercial area along Route 9 between Chemo Road and Route 46. The terrain along Route 9 in this NSA was level. Two measurements were conducted in NSA-11. The dominant noise source at both locations was automobile and truck traffic on Route 9. MS 11-1 was located in the abandoned parking area next to a residence along Route 9. Background noises were from birds and activities at a garage across the street. The a.m. peak hour noise level measured at MS 11-1 was 65 dBA. Measurement site MS 11-2 was located on the lawn at the Hope Manor housing development to the west of Rooks Road. The p.m. peak hour noise level measured in MS 11-2 was 62 dBA.

NSA-12 represents the residences located along Route 9 to the west of the Route 9/Route 46 intersection. Route 9 traffic was the main source of noise in this mostly level partly wooded area. Measurement site MS 12-1 was located next to the parking area of a residence along Route 9. The p.m. peak hour noise level measured at this location was 64 dBA.

NSA-13 represents the rural and lightly developed residential areas located along Route 46 from Route 9 to south of Hatcase Pond Road. The terrain was hilly and wooded throughout most of this area. Two measurements were taken in NSA-13. MS 13-1 was located in a gravel parking area along Route 46 near Hatcase Pond Road. Traffic on Route 46 was the main source of noise at this location. The p.m. peak hour noise measured was 61 dBA. MS 13-2 was located in a wooded area along Hatcase Pond Road. Two automobiles passed the site during the measurement, and background consisted of birds singing and distant traffic noise from Route 46 and Route 9. The a.m. off-peak hour noise measured at MS 13-2 was 39 dBA.

NSA-14 represents the lightly developed residential areas from south of Hatcase Pond Road to the intersection of Route 1A. The Holbrook School is located in this area. Two measurements were conducted in NSA-14. Automobile and truck traffic on Route 46 were the primary sources of noise during the measurements. The terrain along Route 9 in NSA-14 was hilly and wooded. MS 14-1 was located next to the parking area in front of the Holbrook School. The measured a.m. peak hour noise level was 58 dBA. MS 14-2 was located next to the driveway at a residence along Edge of Town Road. The p.m. peak hour noise measurement at MS 14-2 was 59 dBA.

IV. NOISE MODEL CALIBRATION

Measured noise levels are shown along with modeled noise levels and concurrent traffic information in table 2, page 9. The modeled levels were predicted using the FHWA Traffic Noise Model (TNM) with the observed traffic volumes and speed

Table 2, TNM Prediction Model Calibration Summary

Site ID	Roadway	Hourly Traffic Based on Concurrent Traffic Counts				Measured Leq(h)	Modeled Leq(h)	Difference
		Auto	Med Truck	Heavy Truck	%HT			
1-1	Route 1A WB	684	9	21	3%	65.8	66.1	0.3
	Route 1A EB	582	24	21	3%			
2-1	Route 1A WB	681	18	15	2%	71.0	69.5	-1.5
	Route 1A EB	402	33	21	5%			
2-2	Route 1A WB	219	6	15	6%	64.7	61.3	-3.4
	Route 1A EB	327	6	3	1%			
3-1	Route 1AWB	840	27	21	2%	71.3	69.4	-1.9
	Route 1A EB	651	27	48	7%			
5-2	Eastern Ave NB	81	3	0	0%	54.8	52.1	-2.7
	Eastern Ave SB							
5-3	Eastern Ave NB	72	0	3	4%	54.9	52.1	-2.8
	Eastern Ave SB							
7-1	Mann Hill Road NB	51	3	0	0%	50.7	46.7	4 ⁽¹⁾
	Mann Hill Road SB							
8-2	Levenseller Road WB	36	0	0	0%	43.4	45.6	2.2
	Levenseller Road EB							
8-3	Rooks Road NB	75	0	0	0%	53.1	49.5	-3.6 ⁽²⁾
	Rooks Road SB							
10-1	Route 9 WB	171	9	0	0%	63.9	60.7	-3.2
	Route 9 EB	171	12	12	6%			
10-2	Route 9 WB	153	6	6	4%	63.5	60.7	-2.8
	Route 9 EB	156	3	6	4%			
11-1	Route 9 WB	274	9	9	3%	64.7	60.6	-4.1 ⁽²⁾
	Route 9 EB	75	3	3	4%			
11-2	Route 9 WB	135	12	30	17%	62.4	63.9	1.5
	Route 9 EB	198	3	6	3%			
12-1	Route 9 WB	195	9	30	13%	63.5	61.9	-1.6
	Route 9 EB	204	0	21	9%			
13-1	Route 46 NB	60	3	12	16%	61.4	60.1	-1.3
	Route 46 SB	45	3	9	16%			
14-1	Route 46 NB	36	3	3	7%	58.0	56.1	-1.9
	Route 46 SB	78	0	3	4%			
14-2	Route 46 NB	39	3	0	0%	58.7	57.5	-1.2
	Route 46 SB	30	0	9	23%			

Notes:

⁽¹⁾ Did not calibrate because of insufficient traffic.

⁽²⁾ Did not calibrate because of non-traffic related noises during measurement period.

estimates during the measurement period at each site as input. TNM calibration runs are contained in Appendix B. Speed estimates for use in modeling were developed based on the following factors:

- Traffic during the measurement periods was observed in terms of speeds, effects of heavy trucks, influences of intersections, and effects of grades.
- Roads were driven several times to determine speeds based on other automobiles and trucks. Actual speeds, speed limits, and flow restrictions were noted.

The cumulative evaluation of this information resulted in the determination of the appropriate automobile, medium truck, and heavy truck speeds for use on a site-by-site basis during the modeling process.

Model calibration (FHWA considers the model within calibration tolerance if the difference is less than 3 dBA) was achieved at all sites except MS 7-1, MS 8-3 and MS 11-1. MS7-1 did not calibrate because of irregular flow of traffic (platooning) and low traffic volumes. At MS 8-3 and MS 11-1 calibration was not achieved because of non-traffic related noise during the measurement period.

V. PEAK HOUR EXISTING NOISE LEVEL PREDICTIONS

Peak hour noise predictions were estimated at 45 analysis points within the study area (see table 3, page 11) using the 1998 traffic data (Appendix C), and the appropriate speeds determined from the measurement periods and calibration process. These predicted existing noise levels vary slightly from noise levels taken during the measurement period due to several factors:

- Analysis sites are often located at different locations from measurement sites.
- Existing peak noise hour volumes provided by MaineDOT are typically higher than counts taken during the measurement periods.
- The model assumes traffic traveling at equal spacing; during the monitoring period, periods existed during which little if any traffic passed the noise measurement site.
- Composition of vehicles varies from day to day, and from hour to hour; the MaineDOT traffic projections are based on average peak hour conditions over a year's period.

The posted speed of 55 mph (88.5 kph) was used to model future traffic noise levels on the new alignment. Speeds on existing roadways were based on current posted speed limits. Alternative 3EIK-2 provides for four lanes of future traffic, however only two lanes will be open for traffic in the design year of 2030. Noise modeling was conducted for two scenarios, the first with traffic operating on the eastbound

Table 3, Summary of Noise Levels and Impacts by Modeled Site

Noise Sensitive Area ^{1,2}	Modeled Site	Predicted Noise Levels Leq (dBA) ³				
		Existing ⁴ Leq	No-Build		Alternative 3EIK-2	
			Leq	IOE	Leq	IOE
1	R1-1	73	75	3	74	1
	R1-2	63	65	3	64	1
	R1-3	73	76	3	74	1
	R1-4	74	77	3	75	1
	R1-5	67	69	3	69	2
	R1-6	71	73	3	72	1
	R1-7	63	65	2	64	2
	R1-8	67	69	3	67	1
2	R2-1	72	74	2	73	1
	R2-2	67	68	2	67	0
3	R3-1	67	70	3	68	1
	R3-2	64	67	3	64	0
7	R7-1	53	55	2	59	5
8	R8-1	42	44	2	51	8
	R8-2	46	47	2	56	10
	R8-3	49	51	2	61	12
	R8-4	41	43	2	50	9
	R8-5	52	53	2	55	3
	R8-6	44	45	2	54	10
	R8-7	41	43	2	52	11
	R8-8	41	43	2	49	8
	R8-9	44	46	2	49	6
	R8-10	41	43	2	50	9
	R8-11	41	43	2	51	10
9	R9-1	44	45	1	54	10
	R9-2	41	43	2	53	12
	R9-3	41	43	2	52	11
	R9-4	41	43	2	51	10
	R9-5	41	44	3	51	10
	R9-6	41	44	3	53	12
11	R11-1	64	65	1	65	1
	R11-2	58	59	1	60	2
	R11-3	62	63	1	63	1
	R11-4	64	65	1	65	0
	R11-5	58	59	1	60	2
	R11-6	55	56	1	54	-1
	R11-7	53	54	2	53	0
12	R12-1	58	62	4	59	2
	R12-2	57	61	4	57	0
	R12-3	64	68	4	63	-1
	R12-4	57	61	4	56	-1
13	R13-1	63	69	6	64	1
	R13-2	60	66	6	61	1
14	R14-1	62	69	6	64	1
	R14-2	60	66	6	61	1

Note:

¹ NSAs 4, 5, and 6 are not included in the table because they have low measured noise levels resulting mostly from light traffic on local roads. They would not be impacted by the No-build Alternative or Alternative 3EIK-2. Alternative 3EIK-2, at its closest point, is more than 1,000 feet from NSAs 4, 5, and 6.

² For the purpose of this impact analysis, noise levels in NSA 10 were considered to be identical to those in NSA 11.

³ Shaded noise levels approach or exceed noise abatement criteria of 67 dBA.

⁴ Existing ambient study area background noise level was 41 dBA.

roadways, and the second with traffic operating on the westbound roadways. Results of the two scenarios were compared at each site, and the worst case predicted noise level was used for the impact analyses.

Modeled Existing 1998 TNM runs are contained in Appendix D.

VI. TRAFFIC NOISE IMPACTS

Future year 2030 projected noise levels at each noise analysis site for the No-build Alternative and Alternative 3EIK-2 are presented in table 4. For comparison purposes, the increase over 1998 existing noise levels are also included.

Table 4, Summary of Noise Levels and Impacts by NSA

Noise Sensitive Area ^{1,2}	No. of Sites Modeled	1998	2030 No-build		2030 Preferred Alternative			
		Existing Noise Levels ³ (dBA)	Noise Levels (dBA)	Increase Over Existing ⁴ (dBA)	No. of Sites Impacted	Noise Levels (dBA)	Increase Over Existing (dBA)	No. of Sites Impacted
1	8	63-74 ⁵	65-77 ⁵	2-3	6	64-75 ⁵	1-2	6
2	2	67-72 ⁵	68-74 ⁵	2	2	67-73 ⁵	0-1	2
3	2	64-67 ⁵	67-70 ⁵	3	2	64-68 ⁵	0-1	1
7	1	53	55	2	0	59	5	0
8	11	41 - 52	43-53	2	0	49-61	3-12	0
9	6	41 - 44	43-45	1-3	0	51-54	10-12	0
10	7	53 - 64	54-65	1-2	0	53-65	(-1)-2	0
11	7	53 - 64	54-65	1-2	0	53-65	(-1)-2	0
12	4	57 - 64	61-68 ⁵	4	1	56-63	(-1)-2	0
13	2	60 - 63	66-69 ⁵	6	2	61-64	1	0
14	2	60 - 62	66-69 ⁵	6	2	61-64	1	0

Note:

¹ NSAs 4, 5, and 6 are not included in the table because they have low measured noise levels resulting mostly from light traffic on local roads. They would not be impacted by the No-build Alternative or Alternative 3EIK-2. Alternative 3EIK-2, at its closest point, is more than 1,000 feet from NSAs 4, 5, and 6.

² For the purpose of this impact analysis, noise levels in NSA 10 were considered to be identical to those in NSA 11.

³ Noise levels are peak hour Leq in dBA; values calculated to nearest tenth of a dBA and rounded to nearest dBA.

⁴ Increase over existing noise level values calculated to the nearest tenth of a dBA and rounded to nearest dBA.

⁵ Noise levels exceed noise abatement criteria of 67 dBA.

Table 4 indicates the number of sites with noise levels approaching or exceeding the FHWA and MaineDOT noise abatement criteria (NAC) level of 67 dBA (see section VII, below). No increase over existing impacts of 15 dBA or more are predicted. The number of sites that qualify for consideration of noise abatement based is noted. The Year 2030 TNM No-build Alternative computer output runs are contained in Appendix E. Year 2030 computer output runs for Alternative 3EIK-2 are contained in Appendix F.

VII. MITIGATION

Consideration for noise abatement measures must be given to receptors that meet or exceed the FHWA and MaineDOT criteria for experiencing an adverse noise impact. FHWA and MaineDOT define an adverse noise impact as a condition that exists if sound levels approach (within 1 dBA) or exceed 67 dBA for residential land uses. MaineDOT has a second criteria for considering noise impacts. They require consideration of mitigation when predicted noise levels exceed existing noise levels by 15 dBA.

Traffic control methods (such as speed limit reductions) have relatively insignificant effects on noise levels and are difficult to consistently enforce. Noise barriers reduce noise levels by blocking the sound path and thus diffracting sound between roadways and noise sensitive areas. For a noise barrier to be considered feasible by MaineDOT, it must provide a minimum insertion loss of 7 dBA (preferably 10 dBA) for first row benefited receptors, be consistent with safety and operational factors, and be feasible to construct given the topography of the area.

Future predicted noise levels for Alternative 3EIK-2 exceeded the NAC at receptors in NSAs 1, 2 and 3. Alternative 3EIK-2 would pass directly through NSA-1. The mitigation analysis indicated that noise barriers along the alternative would do little to reduce noise levels in NSA-1. Most of the future noise would be from traffic on Route 1A. Even if traffic on Alternative 3EIK-2 were completely eliminated, predicted year 2030 noise from traffic on Route 1A would exceed the NAC. As a result mitigation would not be feasible, because the minimum reduction of 7 dBA would not be achieved. Noise from traffic on Alternative 3EIK-2 would not impact NSAs 2 and 3 because of the distance between the alternative and the receptors. In these areas, future noise levels would be entirely due to traffic on Route 1A. *Noise barrier feasibility and reasonableness checklist* forms for receptors located in NSA 1, 2, and 3 are included in Appendix G.